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FAX

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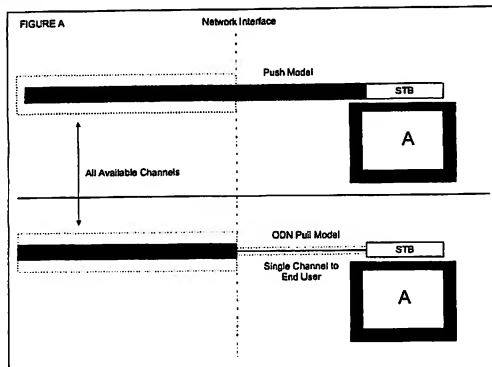
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The On Demand Network
Channel Announcement System™ (CHAS)
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Because of limitations in last mile delivery bandwidth, the current model by which live digital television can be transmitted to an end user must be modified. The On Demand Network is based around the paradigm of content "pull" rather than content "push" to the end user. Under the 'push' model, all channels are delivered simultaneously to an end users set-top box where the person simply switches between channels. Under the ODN 'pull' model, users are made aware of all the channels that are available on the network, but only the desired channel is delivered to the set-top box (see figure A).



The key to the successful delivery of this system is the auto-detection of the available channels on the network by the set-top box. We call this auto-detection/channel transmission system CHAS or Channel Announcement System™. In short CHAS consists of:

1. The use of Session Announcement Protocol to send information from all available channels to a CHAS server on a system running the central database. Each content channel (non-unicast) sends out it's own unique I.D. through the use of SAP. The I.D. consists of the channel's source, address (IP or VP), and transmission circuit (UDP or VC) number-all the information necessary for the set-top box to know where to access to receive those packets.
2. The CHAS Server then performs several functions:
 - Collects SAP information
 - Receives MAC address information from set-top box
 - Queries the database and matches MAC address information of set-top box with customer ID
 - Customer ID is then matched to customer-subscribed channel list.
 - Subscribed channel list is passed to CHAS Server which in turn sends filtered channel information to CHAS client on the set-top box via unicast.
 - Set-top box will only be able to see channels that have been subscribed to.

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3. CHAS client is pre-configured on set-top box to receive it's information via explicit unicast channel to CHAS server. It then displays the channel information via graphical interface and updates itself at regular intervals.

IMPLEMENTATION:

When a user wishes to watch ODN digital television, they activate a menu that displays their individual selection of channels. By selecting a displayed channel, the set-top box sends out a "join" request and is subscribed to that particular channel by the switch either to the appropriate UDP port or VC. Video packets will then be allowed down the user's last-mile pipe for decode to the television set.

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APPENDIX A

Session Announcement Protocol Functions

A SAP client that announces a conference session periodically multicasts an announcement packet to a well known multicast address and port. The announcement is multicast with the same scope (as defined by group address range or TTL) as the session it is announcing. This ensures that the recipients of the announcement can also be potential recipients of the session the announcement describes (bandwidth and other such constraints permitting). This is also important for the scalability of the protocol, as it keeps local session announcements local.

The time period between one announcement and its repetition is dependent on two factors - the scope (TTL) of the session, and the number of other sessions currently being announced by other session directory clients. The goal is to keep the total bandwidth being used below a predefined level for each scope.

A session to be announced is simply multicast to the appropriate well-known multicast address and port. The announcement contains a session description and, optionally, an authentication header. The session description may be encrypted.